Serial No.: 10/541,929
Docket No.: PU030019 (156-759)

Customer No.: 24498
Art Unit: 2621

Remarks/Arguments

Applicants have carefully reviewed the Final Office Action mailed June 8, 2010. Claims 1-23 remain pending in this application. Applicants have amended claims 1 and 14. No new matter has been added. Applicant requests reconsideration of the above-identified application in view of amendments and the following remarks.

Listing of the Claims

Applicant submitted a preliminary amendment with the filing of this application on July 11, 2005. The preliminary amendment included claims 1-23, with claims 1 and 14 being independent claims. Subsequently, applicant submitted a response to a non-final Office Action on April 6, 2010 which included an improper listing of claims. Specifically, applicant inadvertently omitted originally filed claims 5 and 23. In addition, the claims were numbered incorrectly as a result of these omissions. However, neither the examiner nor the applicant discovered these errors until now.

The current listing of claims reflects the proper set of claims. These claims correspond to the original claims set forth in preliminary amendment submitted on July 11, 2005 and include the minor amendments made in the response to the non-final Office Action submitted on April 6, 2010.

Rejection of Claim 1 under 35 U.S.C. § 102(b)

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,621,467 to Chien et al. (hereinafter "Chien"). Applicants respectfully traverse this rejection.

With respect to amended claim 1, Chien, fails to teach or suggest the following elements:

> *for each identified macroblock, deriving at least one intra-prediction coding mode for obtaining coding prediction values to define a concealment direction, the at least one intra-prediction coding mode derived in accordance with the coded image;*
>
> *establishing an interpolation filter for the identified intra-prediction coding mode for estimating concealment values for each identified macroblock along the concealment direction;*

Applicant's claimed invention relates to concealing errors in a coded image. As explained in applicant's specification, coding techniques (e.g., the ISO/ITU H.264 coding technique) can predict a direction for estimating missing/corrupted pixels values and for obtaining error concealment values. For example, at page 4, lines 27-29, applicant's specification recites:

> The proposed H.264 coding technique provides that each intra-prediction mode has an associated interpolation filter that prescribes how to obtain a predicted coding value when proceeding in the direction defined by the intra-prediction mode. In accordance with the present principles, the interpolation filters defined by the H.264 can also provide a mechanism for estimating pixel values for error concealment purposes.

At page 5, lines 12-15, applicant's specification further recites:

> Ordinarily, the interpolation filter prescribed by the H.264 coding technique defines the mechanism for obtaining coding prediction values. In accordance with the present principles, the interpolation filter prescribed by the H.264 coding technique also provides a mechanism for obtaining error concealment values.

At page 2, lines 8-10, applicant's specification recites:

> In accordance with this proposal, the same intra-prediction modes that provide a direction for estimating the coding value from neighboring blocks can also provide a direction for estimating missing/corrupted pixels values for error concealment.

Based on the above passages, applicant has amended claim 1 to now explicitly recite that a "coding mode for obtaining coding prediction values" defines a concealment direction for the macroblocks which include missing or corrupted pixels. Although Chien relates to an apparatus for concealing errors in a reproduced image (Chien: Title; col. 1, lines 6-8), this references fails to teach or suggest anything with respect to using a "coding mode" for concealing errors in an image.

Chien describes three different modes for concealing errors (Chien: Title; col. 4, lines 35-51). More specifically, Chien explains that a first mode of concealment involves a "simple temporal replacement" of the lost block with a temporally predicted block (Chien, Col. 4, lines 35-39), a second mode of concealment uses spatial interpolation (Chien, Col. 4, lines 39-44) and a third mode of concealment merges the first two modes to provide a combined temporal-spatial concealment mode (Chien, Col. 4, lines 44-49). Although Chien discloses three different modes for concealing errors in an image, these modes do not derive a "coding mode for obtaining coding prediction values" to conceal image errors and do not use the derived coding mode to define a concealment direction as recited in applicant's claim 1. Moreover, since Chien fails to derive a coding mode for obtaining coding prediction values, this reference also fails to teach or suggest "establishing an interpolation filter for the identified intra-prediction coding mode" as recited in claim 1. Therefore, for at least these reasons, claim 1 patentably distinguishes over the Chien reference.

Rejection of Claims 2-23 under 35 U.S.C. § 103(a)

Claims 2-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chien in view of "H.264/MPEG-4 Part 10: Intra-Prediction" by Richardson (hereinafter "Richardson"). Applicants respectfully traverse this rejection.

Initially, Applicant asserts that claims 2-23 are not rendered obvious by the combination of Chien and Richardson because the Examiner's motivation in combining the cited references is gleaned solely from the applicant's specification. As such, applicant respectfully points the Examiner's attention to MPEP 2142 which explains that

"impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." Moreover, this section further explains "[t]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made."

Nothing in either of the cited references teaches or suggests applying the ISO/ITU H.264 coding techniques to conceal errors in a coded image. In fact, the cited references fail to teach or suggest the use of any coding technique for concealing errors. Rather, only applicant's present specification teaching this feature, (see e.g. page 4, lines 27-29 and page 5, lines 12-15 of applicant's specification).

In light of the decision in *KSR Intl. Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), applicant acknowledges that the motivation to combine references does not have to explicitly appear in the cited references. However, given the lack of disclosure in the cited art, and the clear fact that the above-described use of "coding mode[s]" to conceal image errors only appears in Applicant's specification, the Examiner has improperly gleaned a motivation to combine Chien with Richardson from applicant's own specification, and that the combination of these references constitutes an exercise of impermissible hindsight. Accordingly, applicant submits that the combination Chien and Richardson lacks merit and that claims 2-23 patentably distinguish over the art of record for this reason.

Notwithstanding the forgoing, Applicant has amended claim 14 in order to expedite prosecution of the present application. In particular, applicant has amended claim 14 in a similar manner as claim 1. As amended claim 14 now recites:

> ...for each identified macroblock, deriving at least one Intra_4x4 prediction coding mode for obtaining coding prediction values in accordance with the H.264 coding technique to define a concealment direction; and
>
> establishing an interpolation filter for the identified intra-prediction coding mode for estimating concealment values for each identified macroblock along the concealment direction...

As explained above, Chien concerns a technique for concealing errors in a reproduced image, but fails to teach or suggest anything with respect to concealing errors

in an image using a "coding mode". Richardson fails in this respect as well. Richardson merely describes the H.264 coding technique and explains its use to code images. However, nothing in Richardson discloses or suggests that the H.264 coding technique, or any other coding techniques for that matter, can serve to conceal image errors. Hence, Richardson fails to teach that a "coding mode for obtaining coding prediction values" for defining a concealment direction or that an interpolation filter is established for the coding mode as recited in claims 1 and 14. Accordingly, claims 1 and 14 patentably distinguish over the combination of Chien and Richardson for at least these reasons.

Moreover, "[i]f an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)). All remaining claims ultimately depend from either claim 1 or claim 14. Accordingly, all of the remaining claims patentably distinguish over the cited references for at least the reasons set forth above. Thus, applicants request reconsideration of this rejection.

In addition to the reasons discussed above, several of the dependent claims recite features which are also patentable and non-obvious over the cited references.

For example, with respect to claims 4 and 16, the cited references at least fail to teach or suggest *"wherein the step of establishing the interpolation filter further comprises the step of deriving a interpolation filter mirroring the interpolation filter prescribed by the H.264 coding technique for the derived Intra_4x4 prediction mode"* as recited in these claims.

With respect to the elements set forth in claims 4 and 16, at page 5, line 27 through page 6, line 3, applicant's specification states the following:

> In some instances, one or more of the pixels A-D in row 210 may have missing values, and thus provide a poor estimate for the pixels a-p in the sub-macroblock 200. In accordance with another aspect of the present principles, a "mirrored" interpolation filter for Mode 1 serves to prescribe the manner in which to obtain such pixel concealment values. In contrast to the Mode 1 H.264 coding technique interpolation filter which makes use of the top neighboring row 210 to provide concealment values as seen in FIG. 3A, the mirrored interpolation filter of the present principles makes use of a bottom neighboring row 220 of pixels A', B', C' and D' for error concealment purposes as seen in FIG. 4A. Thus, instead of using

value of pixel A in row 210 to estimate each of the pixels a, e, i and m, the mirrored interpolation filter employs the pixel A' in row 220.

In general, the cited passage explains that a "mirrored" interpolation filter may select an alternate set of reference pixels for concealment purposes if the reference pixels typically chosen for concealment purposes includes missing or corrupt values. The Examiner acknowledges that Chien fails to disclose the elements relating to the H.264 coding techniques (see page 4 of the non-final Office Action dated March 9, 2010). Likewise, Richardson fails to disclose or suggest the same. Although this reference discloses certain applications of the H.264 coding scheme, this reference fails to teach or suggest anything which is even remotely related to the mirroring technique described in claims 4 and 16. Therefore, since neither of the references teaches nor suggests the elements set forth in claims 4 and 16, these claims are believed to be patentable and non-obvious over the cited references.

Conclusion

In view of the foregoing, applicants solicit entry of this amendment and allowance of the claims. If the Examiner cannot take such action, the Examiner should contact the applicant's attorney at (609) 734-6820 to arrange a mutually convenient date and time for a telephonic interview.

Serial No.: 10/541,929
Docket No.: PU030019 (156-759)

Customer No.: 24498
Art Unit: 2621

No fees are believed due with regard to this Amendment. Please charge any fee or credit any overpayment to Deposit Account No. **07-0832.**

Respectfully submitted,
Cristina Gomila

By: _____

Robert B. Levy
Attorney for Applicants
Reg. No. 28,234
Phone (609) 734-6820

Patent Operations
Thomson Licensing LLC
P.O. Box 5312
Princeton, New Jersey 08543-5312
July 26, 2010